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Fungicide-Insecticide Study on Soybean

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Abstract
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Introduction

This study was designed to optimize insecticide and fungicide use on soybean by comparing different products applied at different timings. To explain yield responses, foliar disease severity and aphid populations were assessed throughout the season.

Materials and Methods

Plots were established on July 14, 2008. Plot size was four 30-in. rows by 35 ft long. The field was set up in a randomized block design with six replications.

Fungicides and insecticides were sprayed either alone or in combination at growth stage R1 or growth stage R3. Two controls were included, one was a non-treated control and the other was an IPM-based control that used the 250 aphid threshold to trigger an insecticide application (Table 1). The R1 sprays were on July 14 and the R3 sprays were on August 6, 2008.

Data was collected for foliar disease three times during the summer. The upper and lower canopies were assessed for percent coverage of foliar disease cause by fungal pathogens. Because of low disease pressure, only the last assessment (August 29) was included in Table 1. Aphids were assessed on selected treatments regularly throughout the summer and are reported as Cumulative Aphid Days (CAD). Finally, grain yield (adjusted to 13% moisture), moisture, protein, and oil were recorded.

Results and Discussion

Aphid populations at the Northern farm reached economic threshold and were sprayed on August 15, 2008.

Preliminary results indicate that insect and disease pressure was greater in plots receiving R1 sprays compared with R3 sprays. In nearly every case an R1 treatment had more disease or aphid pressure than an R3 treatment (Table 1). This suggests that insect and disease pressure did not start until well after the R1 application, so these products were not able to manage the pests.

Yields reflect these results by showing similar differences between R1 and R3 sprays.

This project will continue for the next three growing seasons. We will continue to look at the interaction between insecticides and fungicides to optimize the use of these products on soybean.

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Table 1. Fungicides and insecticides applied at growth stages R1 and R3 and resultant disease and insect pressure and yield response.

Treatment	Application timing	Brown spot in lower canopy (%)	Cercospora leaf blight in upper canopy (%)	Cumulative aphid days (CAD)*	Protein (%)	Oil (%)	Moisture (%)	Yield (bu/A)
Stratego Pro	R1	1.9	1.0	4643	32.6	19.9	12.4	47.6
Stratego Pro	R3	6.2	0.4	2983	32.1	19.9	12.1	51.7
Punch	R1	7.7	1.6	.	32.8	19.7	12.2	49.5
Punch	R3	7.1	1.0	.	31.8	20.1	12.4	47.6
Headline	R1	2.7	0.4	.	31.6	20.1	12.6	55.4
Headline	R3	5.5	0.9	.	32.2	19.9	12.3	53.4
Leverage	R1	7.1	0.0	2282	32.3	19.8	12.3	50.9
Leverage	R3	6.0	0.7	692	32.2	19.8	12.2	54.7
Asana	R1	7.1	1.6	.	31.9	19.8	12.3	54.1
Asana	R3	7.0	0.6	.	32.3	19.7	12.6	57.9
Stratego Pro + Leverage	R1	1.0	1.5	2074	31.7	19.9	12.5	59.0
Stratego Pro. + Leverage	R3	4.8	0.6	498	31.2	20.1	12.3	59.8
Punch + Asana	R1	8.4	0.6	.	32.1	19.9	12.4	52.1
Punch + Asana	R3	6.3	0.5	.	32.1	20.0	12.4	58.8
Control	--	8.7	1.7	5726	33.0	19.6	12.3	46.7
IPM*	--	8.0	1.4	2594	32.9	19.8	12.1	53.1

*Threshold of 250 aphids/plant; Asana was assigned as the IPM insecticide.